

CLAIMS

1. A method for a cellular mobile communications system comprising at least one mobile station (MS) and a plurality of base stations from which an active set of base stations (BS1-BS3) are selected that are capable of providing parallel radio
5 links with the mobile station (MS), comprising the steps of,

transmitting a packet uplink from the mobile station (MS),

transmitting to the mobile station MS measures of the quality on the radio uplinks experienced by the active set base stations, c h a r a c t e r i s e d by the further steps of;

10 selecting one radio base station (BS1-BS3) from the active set of base stations (BS1-BS3) after the packet is transmitted based upon said quality measures, or alternatively, predicting the quality of said radio links and selecting one radio base station based on the predicting result before the packet is transmitted;

15 transmitting information on the selected base station (BS1-BS3) uplink from the mobile station;

forwarding the data packet on a fixed link from the selected radio base station.

2. The method according to claim 1 wherein all the active set base stations (BS1-
20 BS3) provide parallel radio downlinks to the mobile station (MS).

3. The method of claim 1 wherein the measures of the radio uplink quality is/are acknowledgement(s) sent in response from one or more of the active set radio base stations upon said packet being received.

4. The method of claims 1 wherein the measures of the radio uplink quality are
25 transmit power commands.

5. The method of claim 1 wherein the measures of the radio link quality are signal to interference ratios.

6. The method of claim 1, or any of 3-5, when the selecting step is made before transmission of said packet and the link quality predicting step is based on the measures received by the mobile station with respect to one or more packet(s) transmitted previously to said packet.

5 7. The method according to claim 1 wherein said packet is segmented into two or more segments for transmission in subsequent radio frames and the selected base station (BS1-BS3) reassembles the segments into said packet.

8. The method of claim 3 and claim 7 as dependant on the selection after transmission alternative of claim 1, wherein one or more base stations that has
10 positively acknowledged all previously transmitted segment(s) of said packet are the only designated for reception of subsequent segments of said packet.

9. A mobile station (MS) for use in a cellular communications system and comprising,

means (54) for transmitting a packet to be received by two or more base stations
15 (BS1-BS3),

means (55) for receiving measures of radio link quality experienced by said base stations during the data packet transmission, c h a r a c t e r i s e d by:

a posteriori selecting means (56) for selecting based upon said measures one of said base stations after said packet has been transmitted from the mobile station;
20 and or alternatively,

a priori selecting means (56) comprising means for predicting the radio link quality and being adapted for selecting one of said base stations based on prediction of said radio link qualities before said packet is transmitted;

means (53, 54) for transmitting uplink information on which of the active set base
25 stations that is selected, for the packet to be forwarded on a fixed link by the selected base station.

10. The mobile station (MS) of claim 9, having means for receiving packets transmitted from two or more radio base stations in parallel and combining the packets.
11. The mobile station of claim 10 wherein said combining is maximum ratio combining.
12. The mobile station of claim 9 wherein said measures of radio link quality is/are one or more acknowledgement(s) on the receipt of the transmitted packet(s).
13. The mobile station of claim 9 wherein said measures of radio link quality are transmit power commands received from said base stations.
14. The mobile station of claim 9 wherein said measures of radio link quality are signal to interference ratios.
15. The mobile station of claim 9 having means for segmenting the packet into segments fitting into radio blocks.
16. The mobile station of claim 15 as dependent on the a posteriori selection wherein the mobile station power control is controlled by power command(s) received only from one or more of said base station(s) that have reported positive acknowledgement(s) with respect to the transmitted segment(s) of the relevant packet.
17. The mobile station of claim 9 adapted for transmitting the information on the priori selected base station with the relevant packet.
18. The mobile station of claim 9 or 17 wherein said prediction means uses any of the measures of claim 11-13 received in response to one or more previously transmitted packet(s).
19. The mobile station of claim 9 arranged for adjusting its output power to the commands received from the a priori selected base station only.
20. A base station (BS1-BS3) having means to radio receive a packet from a mobile station and means to send an acknowledgement to the mobile station in response to the received packet, c h a r a c t e r i s e d by ,

detecting means for detecting information from the mobile station on a specific base station being selected;

means for selectively forwarding the received packet further in a connected radio network when said detecting means detects the base station is being selected.

5 21. The base station of claim 20 adapted for receiving said information subsequent to the packet being received by the MS.

22. The base station of claim 20 adapted for receiving said information with said packet.

10 23. The base station of claim 20 the detection means are adapted for receiving the selection information on a packet-by-packet basis.

24. The base station of any of claims 20-23 having means for timing downlink transmission of radio frames by use of a synchronisation signal received via an interface to a fixed part of the network for parallel transmission of radio frames from all base stations of an active set.